

JPRS 71956

29 September 1978

TRANSLATIONS ON ENVIRONMENTAL QUALITY

No. 180

DISTRIBUTION STATEMENT A
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Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

BIBLIOGRAPHIC DATA SHEET	1. Report No. JPRS 71956	2.	3. Recipient's Accession No.
	4. Title and Subtitle TRANSLATIONS ON ENVIRONMENTAL QUALITY, No. 180		5. Report Date 29 September 1978
7. Author(s)		6.	
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201		8. Performing Organization Rept. No.	
12. Sponsoring Organization Name and Address As above		10. Project/Task/Work Unit No.	
		11. Contract/Grant No.	
		13. Type of Report & Period Covered	
		14.	
15. Supplementary Notes			
16. Abstracts The serial report contains translations from the world press of articles and press commentary on environmental pollution and its effects and pollution control technology, organizations, and programs.			
17. Key Words and Document Analysis. 17a. Descriptors Worldwide Pollution Environmental Control Meteorology Ecology			
17b. Identifiers/Open-Ended Terms			
17c. COSATI Field/Group 4, 6, 18G, 18H			
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22151		19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 57
		20. Security Class (This Page) UNCLASSIFIED	22. Price PCADY

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REGULATIONS ON DISCHARGE OF PALM OIL EFFLUENT IN EFFECT

Kuala Lumpur BUSINESS TIMES in English 1 Jul 78 p 1

[Article by Anne Koh]

[Text]

THE Environmental Quality (Prescribed) (Crude Palm Oil) Regulations will come into force today necessitating the 102 mills in Malaysia to check effluents to ensure they do not pollute waterways.

A Ministry of Science, Technology and Environment spokesman said yesterday the government will not, however, impose fines if mills were found contravening the regulations this year.

Instead, the spokesman said, if the effluents exceed the BOD (biochemical oxygen demand) limit which from today till June 30, 1979, is 5,000 mg/litre, they will have to pay an excess fee.

The fee works out at \$100 for every metric ton of BOD load in excess of the stipulated maximum. After June 30, 1979, the mills will be subject to fines of up to \$5,000 as stipulated un-

der the Environmental Quality Act 1974.

The limits of BOD is 2,000 mg/l from July 1, 1979, to June 30, 1980; 1,000 mg/l from July 1, 1980, to June 30, 1981; and 500 mg/l from July 1, 1981, to June 30, 1982.

The spokesman said all the mills have applied for licences to operate, another requirement under the regulations.

A check on most mills here show that they have carried out various research and trials on effluent disposal and are ready to at least meet the initial requirements of the regulations.

Mr B.C. Bensham, the deputy director of the operations division of Kumpulan Guthrie Sdn. Berhad, said his company will stop discharging effluents into rivers from four of its five mills from today.

The effluents from the four mills will instead be

carefully applied to crop land employing a procedure of carefully controlled rates of application.

Mr Bensham said it had been shown that the raw effluent improves the physical condition of the soil and makes available valuable nutrients in organic form.

"There is also increasing evidence of the absence of any adverse environmental effects from the land application of effluent carried out in this manner," he added.

At the fifth mill, in Rantau in Negri Sembilan, where the terrain is unsuitable for land distribution of the effluent, Guthrie will employ a process of anaerobic digestion to reduce the BOD level to below 5,000 mg/litre.

After that, the effluent is pumped to cropland at controlled rates to optimise utilisation of its nutrients.

Guthrie's mill with a combined processing capacity of 800,000 FFB per annum, produce approximately 480,000 tons of effluent.

Another company which favours anaerobic digestion of effluents said it was still conducting experiments. A spokesman said that until a foolproof method was worked out the company was quite prepared to pay the initial fines.

Another operator estimated that it would cost as much as \$6 million for a 20-ton capacity mill to set up a proper treatment plant.

Since setting up such an expensive project, the mill preferred to still look at various possibilities before committing capital at this stage.

He said so far, experiments on various methods on effluent treatment were yielding results. — Bernama

NEW ZEALAND

CAR POLLUTION SOARS IN CHRISTCHURCH

Christchurch THE PRESS in English 4 Jul 78 p 1

[Text] Christchurch traffic engineers, scientists, and doctors are mystified by the rising level in Christchurch of nitrogen oxide--a pollutant that usually comes from car exhausts.

The level of nitrogen oxide in Christchurch is increasing at a faster rate than is the number of vehicles through the city.

Authorities on pollution attribute some of the increases to the slowing of traffic flows because of traffic lights and congestion. Cars idling, or accelerating then decelerating at slow speeds, give off more polluting gases than those travelling at more normal speeds.

According to figures given by the Health Department's air pollution centre in Christchurch, nitrogen oxide levels exceeding the high level of 200 micrograms per cubic metre of air have increased markedly in the last four years. Yet traffic flows have not altered.

An example is the stretch of Manchester Street between Hereford Street and Worcester Street.

The department's monitor recorded readings exceeding the high level in 1974 three times; in 1975, 14 times; in 1976, 34 times; and last year 41 times.

Miss Rosemary Patterson, assistant air pollution control officer, attributed some of the increase to the installation of traffic lights at Hereford Street and Worcester Street, causing acceleration and deceleration of vehicles.

The City Engineer (Mr M. J. Gadd) said that the lights were controlled by computers to stop traffic congestion.

Mr Gadd agreed that the acceleration and deceleration of cars for traffic lights did increase nitrogen oxide, but he said that the rate of pollution increase could not all be attributed to traffic lights.

The fact that the big increase of nitrogen oxides in Christchurch's inner city cannot all be attributed to the lights and the traffic leaves a mystery.

Perhaps in a time of recession, untuned cars are emitting more pollutants. A tune-up for a four-cylinder car is likely to cost about \$30.

Mr Austin Cole, manager of Lichfield Motors, said that people definitely were leaving it longer before they had their cars tuned.

Mr Cole said that cars coming to his garage for tuning needed far more work done on them than in the past. He estimated that if legislation enforcing emission tests came into being, 78 percent of cars in Christchurch would fail.

Miss Paterson said that the highest pollution level this year for Manchester Street was 711 micrograms of nitrogen oxide per cubic metre of air. That record for Christchurch was taken on June 17, and the average for the city that day was 505 micrograms.

The Canadian air quality objectives say that maximum nitrogen oxide levels for 24 hours must not exceed 200 micrograms, and that the maximum tolerable level is 300 micrograms.

Miss Paterson said that although the term "tolerable" was not explained by the Canadian authorities, sufferers from asthma and bronchitis would certainly not be able to tolerate levels above 300 micrograms.

Dr J. E. Ferguson, a reader in chemistry at the University of Canterbury, said that he was not sure why the level of nitrogen oxides in Christchurch should be increasing to such an extent while the traffic flow remained stable, but a survey in Sydney had shown that slower speeds in town did increase the levels.

Dr Fergusson said that the petrol quality in New Zealand had not changed in the last few years, and he did not think that the petrol grading now would lead to greater pollution.

Dr M. McEwan, a lecturer in chemistry at the university, suggested that the temperatures at the time of the recordings should be noted, as there might be a link between the two.

Dr J. McLeod, a chest physician at The Princess Margaret Hospital, said that the levels in Christchurch at present would certainly affect such people as asthmatics who already had damaged lungs, and those with sensitive noses and throats.

Healthy people would be affected if the level of nitrogen oxide continually exceeded 200 micrograms for most of the year, Dr McLeod said.

Smoke levels in Christchurch have exceeded the World Health Organisation's goal of 120 micrograms per cubic metre of air, 10 times this year.

The excessive smoke was recorded in May and June, and on the two days of this month. It was expected to be excessive again last evening.

Lack of winds caused by a ridge of high pressure resulted in low-lying smog over much of Christchurch yesterday.

Although the pollution appeared thick in parts the Meteorological Office described the temperature inversion layer as slight and the pollution as only moderate.

The office expected the inversion layer and absence of winds to continue today and possibly tomorrow.

CSO: 5000

AFFORESTATION FOR POLLUTION CONTROL

Peking KWANGMING DAILY in Chinese 23 Jun 78 p 1

[Article by Wei Kuo-jung [7279 0948 2837] : "Anti-poisonous Gas Tree Species Selected Out by Kuangtung Provincial Institute of Botany to Contribute to Environmental Protection"]

[Text] Through the cooperative efforts of the Environmental Protection Group of Kuangtung Provincial Institute of Botany, the Department of Forestry of Hua-nan College of Agriculture, Canton Chemical Plant, Canton Nitrogen Fertilizer Plant, Canton Heavy Machinery Plant, and Canton Municipal Afforestation Committee and after several years of survey, research, and experimentation, several tens of species of trees, which are resistant to the harmful gases in the region of Canton, have been selected out from among several hundred species of plants to contribute to afforestation of industrial districts, purification of the urban atmosphere, and the protection of the environment. [The related organizations] have received commendations from the National Scientific Conference. At present, these species are being extended and planted at a group of factories in Canton.

Due to the fact that in industrial cities, the exhaust from burned fuels, production procedures, and transportation vehicles, contains such harmful substances as sulfur dioxide, chlorine, nitrogen oxide, hydrogen fluoride, etc. the atmosphere is polluted to the extent of seriously affecting the health of humans and the growth of plants. Beginning in 1973, the Canton Municipal Afforestation Committee organized related scientific research units and colleges to carry out, first of all, a survey of more than thirty factories to determine the condition of damage and growth of the trees, the crop plants, the fruit trees, and other plants in the vicinity. Based upon the condition of pollution, the nature and the density of the pollutants, and such other factors as the condition of the soil, the vigor and the bionomics of the plants, the ability of the plants to resist and/or to absorb the harmful gases was determined. As a result, a preliminary group of fifty plus species were selected out to be trees and plants having relatively better resistance.

For the purpose of obtaining reliable scientific data, some experimental units carried out artificial fumigation tests with sulfur dioxide, chlorine, and hydrogen fluoride for more than four hundred species of plants, which had commonly been used for afforestation in the region of Canton. Experiments were also carried out by planting plants in the polluted sites of the factories, by pot culture, etc. Control plots were established in the Botanic Garden, and there were also studies on the physiological and biochemical reactions of plants. Among the first group of species of relatively high resistance to a mixed gas of primarily chlorine, there are twenty-one species including Indian and alpine *Ficus wightiana*, *Jambosa vulgaris*, DC., Hainan *Phaseolus mungo*, *Cinnamomum Cassia* Bl., *Nerium odorum*, etc. Among those that are relatively more resistant to a mixed gas of primarily sulfur dioxide there are small-leaved *Ficus*, Mei-li *Ficus*, woody *Ephedra*, *Viola tricolor*, heart fruit, rice lily, etc., totaling twenty-two species. Those that are relatively more resistant to a mixed gas of primarily hydrogen fluoride are *Livistonia chinensis*, Br., *Machilus Nanmu*, Hemsl., rubber *Ficus*, *Murraya paniculata* (L.) Jack., etc., totaling nineteen species. Scientific experiments have proved that these resistant tree species grow well under an environment of constant pollution by harmful gases. At present, the first group of resistant tree species thus selected out have been planted at Canton Chemical Plant, Canton Nitrogen Fertilizer Plant, and Canton Chemical Fiber Plant and the survival rate has been very high. More than seventeen thousand trees and shrubs belonging to several tens of species have been planted on the grounds of the Canton Chemical Plant, where it had been difficult for trees to stay alive. These newly planted trees and shrubs are distributed in more than thirty little gardens and afforestation of the grounds of that plant has been basically a reality.

Since the spring of this year, following the important directive of the municipal committee concerning the fact that afforestation of cities should begin at the factories, many plants have launched the program of planting trees for pollution control. According to available statistics, more than sixty-eight thousand stands of various tree species have been planted at the more than one hundred ten factories of the city [Canton,] an increase of 30 percent over the same time last year.

6168

CSO: 5000

CANADA

QUEBEC SAID TO BE POORLY PROTECTED FROM RADIOACTIVITY

Montreal LA PRESSE in French 9 Sep 78 p B7

[Article by Jean-Pierre Bonhomme]

[Text] The Quebec public is poorly protected against radioactive radiation, particularly that which comes from equipment used in medicine, and the Council of Ministers of Quebec is poorly informed on this subject.

Dr Jean-Marc Legare, chief of the Radio-Protection Section in the Environmental Protection Services, expressed that opinion yesterday during an interview in which governmental control methods relative to dissemination into the environment of mining residues and other natural radioactive substances were mentioned.

Jean-Marc Legare, a doctor of physiology from the University of Montreal and a diplomate of the American Board of Radiology, is afraid that because of the skepticism of provincial civil servants at the intermediate level concerning the action of protectors against radiation, Quebec will abandon all its jurisdiction over radioactivity to the federal government. The radiation protection specialist, who has been in the employ of the Quebec government since 1969, believes that his activity, like that of his colleague, Paul E. Carrieres, is not taken seriously by all the authorities of officialdom. For proof of this bureaucratic indifference he offers the fact that the Quebec Radiation Protection Service has only three officers, while English Canada, counting the federal government, may have recourse to the services of some 400 persons. For his part, the Ontarian Environment Minister musters radiation protection personnel of 20 persons.

It is because of that lack of personnel, Mr Legare affirms, that the government of Quebec has not yet been able to complete valuable studies of the problem posed by the propagation in the environment of the Varennes region, below Montreal, of radioactive residues resulting from the operations of the Erco Company. The Erco plant produces fertilizers from phosphates imported from the state of Florida. The radioactivity of these substances is well known.

Mr Legare and Mr Carrieres said yesterday that a real problem is involved, which must of necessity be worried about, even though it will probably never be necessary to take broad emergency measures. For the moment, they said, the government services just took preliminary samples two years ago.

The specialists indicated that the Varennes residues, part of which are composed of solidified slag from phosphate-fusing operations, are probably not so injurious as those from the former Oka mine, which are a fine dust that wind action diffuses throughout the environment.

It is because of the action of these officials that the operators of a quarry, "the Oka Aggregates", were forced to terminate their activities. It is known that the affair was taken to court by the legal service of the Environmental Protection Service.

Dr Legare also emphasizes that the most serious problem relative to the effects of radioactivity on humans lies in hospital environments. He explains that since 1972, since the adoption of the environmental quality law, his service no longer has the power to exercise any control over radiation from medical equipment. Since that time, he adds, there is absolutely no control over x-ray equipment and over the frequency of their use. In several hospitals and several private clinics, the regulation protective walls do not exist and the personnel are subjected to dangerous doses. In other cases patients are poorly protected and the x-ray beams are often directed at parts of the anatomies--the gonads--which should not be exposed.

He reminds us that the somatic and hereditary effects of ionizing radiation are very well known, "from the point of view of acute and chronic effects--the effects on the eyes and skin, in terms of the wavelength of the ultra violet rays and lasers are the best known".

The doctor stresses that because of the paucity of means given him, Quebec is abandoning, in other instances, the whole field of non-ionizing physical agents, that is ultra violet rays, infra red rays, lasers, masers, microwaves and electromagnetic and mechanical waves.

If a disaster were to occur in Gentilly, the doctor said--according to him this is possible, despite the decline of work in nuclear power plants, Quebec would not be prepared to face it, not being in effective communication with the sites.

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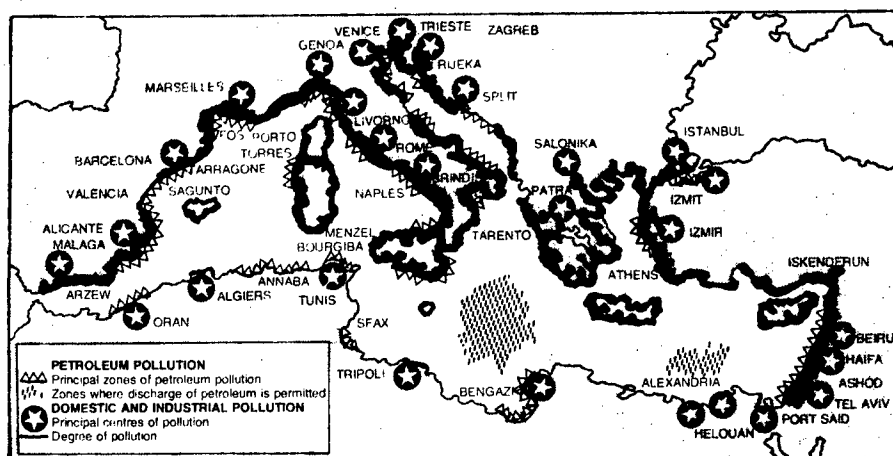
CONFLICT BETWEEN MAN, ENVIRONMENT EXAMINED

Beirut EVENTS in English 8 Sep 78 pp 44-45

[For Part I of this series see JPRS 71797, 1 September 1978, No 178 of this series, pp 24-28]

[Article by Jim Muir: "Environment Under Seige, II"]

[Text]



Every year, the Mediterranean gives us about a million tonnes of fish. In return, we dump in it up to a million tonnes of oil, countless thousands of tonnes of untreated sewage, garbage, and industrial wastes laced with toxic chemicals and poisonous heavy metals. Throughout history, we have tended to look on our seas and oceans as infinite: infinitely giving of their goodness, and infinitely forgiving of our impositions.

As in other environmental domains, our ever-growing demands are catching up with us and for some years the

alarm bells have been ringing over pollution in the Mediterranean. Some environmentalists have predicted that, if we go on as we are, the sea will be dead within a matter of years. There is also great concern over the potential threat to the Gulf and the Red Sea.

The strain on the Mediterranean has greatly increased recently, and has made it the priority for concern of the United Nations Environment Programme (UNEP) after its establishment in 1972. The threat comes from various sources. The upsurge in oil shipping

inevitably meant a degree of oil pollution, accidental or deliberate. Rapid industrialisation – mainly on the European side but latterly on the North African coast – has brought a growing influx of industrial pollutants. Population growth and the migration trend towards coastal cities has brought the basin's inhabitants to more than 250 million, swollen by an annual invasion of 30 million tourists, and there is a corresponding rise in the amount of sewage and garbage being dumped.

Much environmental concern has been focused on oil pollution, and particularly on the risk of a major oil-tanker disaster. Something like 350 million tonnes of oil is shipped across the Mediterranean every year, and the expansion of the Suez Canal will mean that vessels of even greater tonnage will be crossing the Mediterranean in the early 1980s, further enhancing the risk of a catastrophic accident. The Mediterranean has so far escaped a major oil spill, but one marine pollution specialist, Professor Aftim Acra of the American University of Beirut (AUB), believes that a disaster of Amoco Cadiz magnitude "would destroy the Mediterranean." Another recent study concluded cagily that "no practical assessment has yet been made of the potential effects of a massive oil spill on such a poor and fragile environment as the Mediterranean."

One of the main results of the "Mediterranean Action Plan" sponsored by UNEP was the establishment in 1976 of the Oil Spill Control Centre at Malta. Its effectiveness has yet to be tested; some experts are doubtful about its chances of controlling a major spill, and about the soundness of some of the chemical dispersants now being used. The danger is particularly acute for the Mediterranean, since it is almost land-locked and its waters flush out into the Atlantic on an 80-year cycle and at depth, meaning that surface pollutants are left behind.

Studies show that, so far, accidents have constituted only a minor element in the Mediterranean's pollution build-up. Much more significant is the "chronic" pollution from daily malpractices. One recent report listed these major contributors, in order of gravity,

as: deballasting, (the pumping out of the oil-fouled water used to fill oil tanks on return journeys), the discharge of bilge water, the washing out of oil tanks, effluents from refineries, and discarded lubricants. Studies estimate that 30,000 tonnes of oil pollutants are dumped annually, and 20,000 tonnes accidentally spilled at refineries. Leak-

age from ships in transit is estimated at 62,000 barrels per day – a figure which would yield an annual input of over 3.3 million tonnes per year, although more conservative estimates put it as half to one million tonnes.

If oil is spilled, the impact is immediately apparent in the sight of thousands of dying seabirds. In the longer term, oil is decomposed under the influence of marine organisms. But in so doing, it uses up the oxygen in the water, which cannot be reoxygenated because the oil seals it from the atmosphere. An oil spill involving a 100,000-tonne tanker would need the oxygen from something like 40 billion cubic metres of water, thus depleting a large area and destroying its marine life. Once decomposed, the oil is reduced to tar balls which can float in the sea or pollute regional coastlines for years.

Some progress towards restricting oil pollution, by the prevention of dumping from tankers and aircraft, has been made under the Mediterranean Action Plan, but by early this year only six of the 16 countries involved – and not the major offenders – had ratified the 1976 protocol.

Even less progress has been made towards dealing with the industrial sewage and garbage pollution. Heavy metal and pesticide pollution is considerable, particularly on the European side. A protocol on pollution from land-based sources was included in UNEP's original action plan in 1975, but has so far defied implementation (see *Events* 49). The Monaco inter-governmental meeting in January this year again put off a decision, but sponsored a comprehensive study of river pollution as well as a 650 page book on the current state of the Mediterranean.

If few concrete results have so far been achieved, UNEP's efforts have at least created awareness and provided a framework which will stand in good

stead if some of the more gloomy predictions look like coming true. The AUB's Professor Acra believes that damage to the Mediterranean will increase and may reach a critical point, but that this new-found awareness will avert the ultimate disaster. His own country is one of the worst offenders: pre-war Beirut used to dump around 1,200 tonnes of untreated garbage daily, and vast quantities of rubbish continue to foul the coastline. A small but active Fight Pollution Club plans to launch a major clean-up campaign next year.

The formula adopted by UNEP for promoting environmentally-sound development in the Mediterranean was

later applied in the Gulf, where it met with a more immediate response. This may have been because the Gulf states are more homogeneous: the main political problem intruding on the discussions was a sharp dispute between Iran and its eight Arab neighbours over what the Gulf should be called.

But it also reflected the gravity of the environmental hazards facing the region, dangers potentially greater even than those threatening the Mediterranean: its almost enclosed waters are shallow and warm, with limited capacity for breaking down and dispersing pollutants, which are driven shorewards by the prevailing winds and currents.

Around 60 per cent of the world's seaborne oil is shipped from the Gulf – an estimated billion tonnes annually. On average, 100 ships enter the narrow Hormuz Straits every day, and the risks of collision are increased by the multiplicity of local traffic and oil rigs. Oil riches have spurred a sudden proliferation of industrial plant and development. Onshore industrial complexes are, therefore, expected to be the main source of pollution hazard. Further strain is imposed by the wastes from the cities, growing at an unprecedented rate: urban population is

doubling in from four to ten years.

The Gulf states met under UNEP auspices in Kuwait in April to sign treaties and adopt an Action Plan to introduce environmental considerations into development. The states pledged to prevent or combat pollution from all sources and to cooperate in dealing with any disasters. The meeting decided to establish an oil spill emergency centre on Bahrein and to make Kuwait the headquarters of a Regional Organisation for the Protection of the Marine Environment. A trust fund of \$6.3m was also established. Experts are optimistic about the chances of success in the Gulf, not least because the states concerned already share a high degree of regional awareness and have established cooperation in other fields.

Less satisfactory are the prospects for cooperation in the Red Sea. Although industrialisation is not yet so intensive, the narrow sea is a major oil-shipping route, and the risk of collision is always there. Meetings sponsored by UNEP and the Arab League's Economic, Cultural and Scientific Organisation (ALECSO) were held in Jiddah in 1974 and 1976, but progress has been slow because of the political conflicts in the Horn of Africa. ■

NEED FOR EXPANSION, DEVELOPMENT OF FORESTS EMPHASIZED

Khartoum AL-AYYAM in Arabic 13 Jun 78 p 4

[Article by Hamid Mohammad Hamid: "An Official in the Forestry Department Wonders: Is This Agricultural Expansion at the Expense of Pastures, Forests and Natural Beauty? Would Desert Encroachment Extend to Al-Jazirah? Projects to Form Protective Belts and 300,000 Pounds to Plant Trees Along Madany Street in Khartoum"]

[Text] Our correspondent met with one of the officials who is an expert on forestry in al-Jazirah. Although it was a short meeting, it is quite significant as we move rapidly toward agricultural and social development. It reveals matters which deserve to be studied with extreme care.

Mr Ibrahim Ahmad, assistant to the forestry superintendent at al-Jazirah, began: "This agricultural expansion at the expense of green pastures, forests, trees and natural beauty is fraught with dangers, and we shall limit ourselves to those affecting our forests."

"This agricultural expansion strips our land of forests and erodes our soil. Although the desert encroachment started north of Kordofan and in part of the White Nile, if we are not quick to save the greatest possible acreage of forest and start forestation of land set aside for this purpose, it will extend to al-Jazirah."

He went on to say that there are three types of forests at al-Jazirah-- Nile, secluded and camphor tree forests.

For decades, these forests have not been increased, due to expansion in agricultural projects which yield annual revenue.

He divided the al-Jazirah forests into three categories:

1. Irrigated forests situated close to Abdul-Majid's agricultural project. Their area is 2,359 feddans.
2. Sunt forest, bordering the Blue Nile. Its area is 7,000 feddans.

3. Secluded forests, with an area of 16,000 feddans.

The irrigated forests have no set appropriations of water requests submitted to the al-Jazirah project. Instead, they are irrigated with surplus water, requested by field inspectors, through the project's canals. This is a situation which should be reconsidered.

Creation of Protective Belts

Mr Ibrahim said that al-Jazirah needs protective belts of dense trees. Projects have been submitted to create such belts in the Rifaah region, east of the Nile, and another in Wadi Mazzoub. This is in addition to the proposals submitted by the superintendent of irrigated forests in al-Jazirah.

He added, "We have submitted proposals to establish areas of forest reserves amounting to 79,000 feddans, situated in al-Batanah region, east of al-Rahd."

Other Projects

"We have a new project, also, to line Madany Street in Khartoum with trees from Madany to Tiri, a distance of 150 kilometers, at a cost of 300,000 pounds. The project is to be carried out in stages, at a cost of 2,000 pounds per kilometer, which includes the cost of irrigating wagons, water tanks and an iron fence to protect the trees."

Creation of a Nursery

There is a project to create a nursery in the tourist-oriented Ambaronah forest in Madany, to supply needed plants for the Mudirieh (province). The cost is 7,000 pounds, 400 pounds have already been appropriated to start the work.

Services

In addition to the above-mentioned projects and plans, the official said they provide other services, such as supplying citizens with firewood, since al-Jazirah produces no charcoal.

However, firewood is available at the average price of 182 pounds for a feddan of camphor firewood and 77 pounds for the sunt wood.

(?Soil Improvement)

He spoke of (?soil improvement), which is an operation used to improve the growth and production of the Nilotic forests.

Cycles of Cutting Forests

Forests are cut according to plan and time schedules. Thus, sunt trees are cut once every 20 years and camphor trees once every 8 years.

Accordingly, expansion in forestation is needed in order to conserve this resource, not to mention preserving the aesthetic beauty of forests and their beneficial effects on the human soul.

The revenue from forests for the year 1977 was 85,000 pounds, much better than the estimated figure of 26,000. The type of trees involved were the following: sunt, camphor, salam, (Huraz Kuk and Hajlii).

However, in spite of all these efforts, the number of forest workers in al-Jazirah does not exceed 225, plus 25 supervisors and experts.

No Budget for Development

In answer to a question about the budget, the official said that in spite of our eagerness to achieve and succeed, there is no budget for development, or for the six-year plan for al-Jazirah forests. However, the general budget for the year 1977-78 is 130,000 pounds.

The above is an account of our meeting with the official in the al-Jazirah forestry department. It certainly reflects a great deal of careful study and close examination. It highlights desert encroachment on farmland, the effects of agricultural expansion at the expense of forests and pastures and effects on livestock and, consequently, on meat consumers. Accordingly, our development campaign should be a comprehensive one, allowing no aspect of the economy to benefit at the expense of another. The so-called green al-Jazirah needs to take care of its forests, since in fact it would be a desert had it not been for the lands used in agricultural projects.

Finally, forestation in the region of the giant al-Jazirah project would benefit farmers and agricultural and seasonal workers. It would provide them sheltering shade for rest before resuming their work. This is how we view forest development in al-Jazirah.

9298

CSO: 5000

CREATION OF 1,100-KILOMETER GREEN BELT TO BEGIN THIS YEAR

Damascus TISHRIN in Arabic 15 Aug 78 p 2

[Article by Jihad Muhammad: "Creation of Green Belt Around Semidesert To Begin Before End of Current Year; Belt Is 1,100 Kilometers Long and Extends From Jordanian Borders to Iraqi Borders"]

[Text] Work will begin before the end of the current year to implement the project to surround the Syrian semidesert with a green belt so as to stop the encroachment of the desert on the populated areas--an encroachment that has intensified in recent years.

What Is Green Belt?

This has been stated by Engineer 'Abdallah Hamid, the director of forests and afforestation at the Ministry of Agriculture and Agrarian Reform, who said that the green belt project is tantamount to a strip of plant life including forest and fruit trees and grazing shrubbery separating the semidesert from the populated areas and filling the so-called marginal area with a rainfall of 200 to 225 millimeters [annually].

Green Belt 1,100 Kilometers Long

The green belt will be 1,100 kilometers long and will extend from the Jordanian borders in the south to the Iraqi borders in the northeastern part of al-Hasakah Governorate and will pass through the governorates of al-Suwayda', Dar'a, Damascus, Homs, Hamah, Aleppo, Idlib, al-Raqqah, Dayr al-Zawr and al-Hasakah.

Goals of Project

This project seeks the following:

Eliminate veiled unemployment in these areas and raise the number of working days from 30 to about 150 days annually, thus tying the farmer to his land and reducing rural emigration because various forms of

afforestation require long hours of work when compared to the traditional horizontal agriculture, such as the cultivation of barley, for example, which requires 30 days annually for both planting and harvesting, keeping in mind that planting seasons occur only once every several years in these areas.

Increase individual income noticeably in these areas--an increase which will reflect positively on the country's national income.

Improve the climate of the immediate belt area and of the area adjacent to it, thus making this area suitable in the future for more stable and less costly crops, in addition to re-covering this area with vegetation, as it used to be in the past.

Stop desert encroachment on populated areas.

Secure refuge and feed for wild and domesticated animals. The project will be implemented in phases in the form of green islands that will grow longer and wider and that will increase in number annually until they ultimately meet in the form of the required belt.

Trees To Be Planted in Green Belt

The various kinds of trees will be planted as follows:

Twenty percent forest trees in the areas unfit for fruit trees or grazing shrubbery and on the sides of the public roads which will pass through the belt.

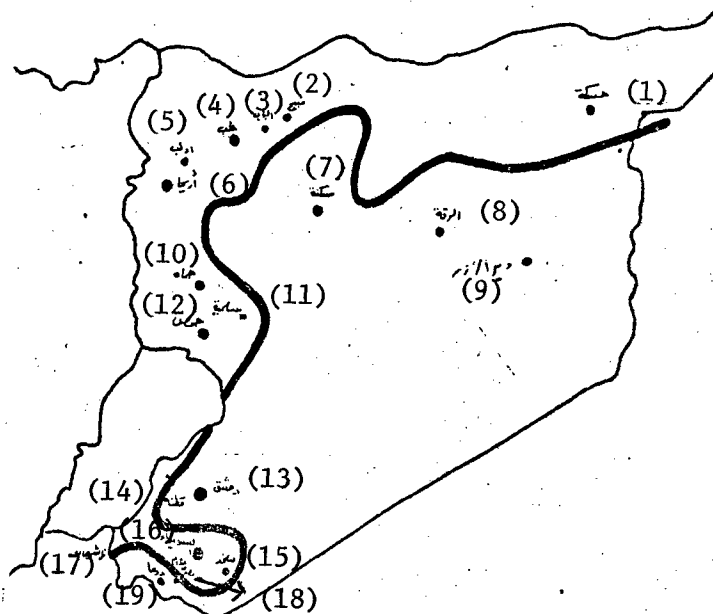
Twenty-five percent grazing shrubbery in the areas well known for livestock breeding.

Fifty-five percent fruit trees, including olive trees, pistachio trees, grapevines, fig trees and almonds.

The director of forests and afforestation noted that the country's political command is devoting major attention to the project. The country will finance the initial work in the project, in addition to aid from the World Food and Agriculture Organization and from the World Food Program which are scheduled to contribute 12 to 17 million dollars in in-kind donations consisting of foodstuffs [sic] for the green belt project, the forest roads and afforestation project. The subsequent financial commitments will be shouldered by the country.

First Phase in al-Qasir Area

Implementation of the first phase of the project will begin in the next few months with an island in al-Qasir area, Homs Governorate. The island will be 10 kilometers long and 2 kilometers wide and will include the villages of Husayniyah, Shamsayn and Dumniyah al-Sharqiyah and will be completed in 1980-81.



Map Demonstrating Green Belt

Key:

- | | |
|-----------------|---------------------|
| 1. Al-Hasakah | 11. (Silmiyah) |
| 2. (Nabaj) | 12. Homs |
| 3. Al-Bab | 13. Damascus |
| 4. Aleppo | 14. Qatanah |
| 5. Idlib | 15. Salkhad |
| 6. Ariha | 16. Al-Suwayda' |
| 7. (Maskanah) | 17. Tall Shihab |
| 8. Al-Raqqa | 18. (Busrat Hisham) |
| 9. Dayr al-Zawr | 19. Dar'a |
| 10. Hamah | |

Why One Island?

The reason for beginning with one island is due to:

The volume of the allocations and aid set aside for this purpose.

Exploring the situation of these areas, considering that this is a new and pioneer experiment carried out in the country for the first time.

Gaining work experience by the technicians, considering that this is the first time such an operation is carried out in cooperation between the state and the citizens. The state will shoulder all the responsibilities of preparing the land and providing the seeds, the seedlings, the protection and the care, etc. The citizen will only have to get training on

the technical matters pertaining to these trees, considering that the trees will ultimately be owned by the citizen.

This means that this project is tantamount to giving on one side, namely the state, in the interest of the citizens, of developing their capabilities and of improving their social standard and standard of living. In light of completion of the first island, of the observations gathered during implementation and the success that the island will achieve, the form of implementation of the second island and of the belt as a whole will be decided.

It is to be noted that a special Syrian committee headed by 'Abdallah Hamid, the director of forests and afforestation in the Ministry of Agriculture, had conducted a free-of-charge field study for several months.

8494

CSO: 5000

OKAVANGO 'WILD SWAMP PARADISE' SAID IN DANGER

Johannesburg THE STAR in English 7 Sep 78 p 11

[Article by Les Luckhoff in the column "Care"]

[Text] The eradication of the tsetse fly and a change in river flows are threatening the Okavango delta in Botswana writes Les Luckhoff of the Okavango Wildlife Society.

To many it is still virgin Africa. The habitat is unspoilt, and wildlife abounds. But for how long? Some conservationists already feel that time is running out for Botswana's Okavango delta.

The tsetse fly that has kept man and his cattle at bay — and has in fact claimed territory for the delta in the last 50 years — is now being eradicated. Even though the spraying is still in the experimental stage, large areas of the swamps have been sprayed with endosulphin in an attempt to kill the tsetse.

Although the spray seems to have no effect on other insects or on vegetation, alarming reports of fish deaths have been received.

The Okavango Wildlife Society has grave reservations about the spraying programme, as once the tsetse fly has gone, man and cattle will rapidly encroach into the delta with

unknown results. Already the mingling of cattle with wildbeeste has spread foot-and-mouth disease.

RIVER FLOW

Perhaps an exchange of land is the answer if the game and the delta are to be saved.

Another threat is the delta's changing topography. Over the years the flow of the Okavango River has changed from south-west to south-east and experts fear that one day the flow may be diverted northwards leaving the delta dry.

The whole process could be happening now. One indication is the Savuti River, which began flowing a few years ago after being dry for a long time. Now the Mobabi Depression has become one large lake almost sealing off access to the north.

The delta's vast water supply, although reported to be unthreatened for decades, must be carefully watched as the most drastic changes can take place very suddenly in that delicate ecosystem.

Immediate demands for water for agriculture and mining have ceased because of good rains, and Anglo American say they have a three-year water supply in the Mopipi Dam

which can be supplemented by water from boreholes.

But, with the possible opening of a new mine would that be enough in an extended drought?

TWO FILMS

While the society continues identifying and providing solutions to some of the immense problems which have arisen in the delta, the real headaches will always have to be faced by the Botswana Government. Fortunately it realises that it holds a unique area in trust for future generations.

The Okavango Wildlife Society is screening "The call of the Fish Eagle" and "Safari by Balloon" — an outstanding wildlife movie shot in Kenya — in the Senate House at the University of the Witwatersrand at 8 pm every evening from September 8 to 16.

DJIBOUTI

EQUIPMENT FOR DRILLING WATER WELLS

Djibouti LE REVEIL DE DJIBOUTI in French 13 Jul 78 p 3

[Article: "In a Few Weeks Ultra-Modern Equipment for Drilling Water Wells"]

[Text] Two contracts have been signed for the delivery of two 500-foot deep drilling components: the first, obtained through loans from the European Development Fund; the second, from funds made available to the Republic of Djibouti by Saudi Arabia.

Delivery of this new equipment is to be made at the beginning of August, which will make it possible to replace the two existing drills, now old and worn. One of these two drills will be allocated to the northern part of the country; the other, to the southern part, and will make it possible to successfully carry out the drilling program that is needed for rural and pastoral development.

Each component consists of a drill that is capable of working in both a rotating motion or by percussion, to remove mud or air, and which is capable of drilling to a diameter of up to 220 meters wide, and to explore to a depth of 500 meters. This equipment is permanently mounted on a truck having a three-axle carrier. It weighs a total of about 28 tons. Four cross-country vehicles accompany this equipment, including a 6-cubic meter tank wagon, a truck to haul tubes, a crane truck and a workshop truck.

This equipment will be set up by two technicians who will constitute the existing personnel for a period of three months. Four drilling trainees will be sent to Algeria, where the Foraco Company has a drilling school to qualify persons to become drilling foremen. A person in charge of maintenance and of special drilling equipment will complete a course of training in France in order to receive training in the care of this new equipment.

This new equipment that utilizes new techniques will make it possible to drill more quickly and under better working conditions for the personnel. In particular, the technique of "drilling to the bottom" makes it possible to obtain drillings up to 100 meters deep in ground that is very hard and without water--the latter a very important point, since previously it was very often necessary to supply water to work sites over a distance of more than 50 km.

This new acquisition will be an excellent work tool for rural engineers in exploiting the water resources of the national territory for the development of rural centers, pastoral hydraulics, and the establishment of irrigated areas for agriculture.

8255

CSO: 5000

DETAILS ON RAIN DAMAGE TO ADDIS ABABA

Addis Ababa THE ETHIOPIAN HERALD in English 24 Aug 78 p 6

[Text]

More damages have been reported as a result of flood caused by the heaviest downpour over Addis Ababa in 20 years that occurred last Saturday evening.

Property estimated at a cost of 50,000 Birr has been damaged by flood in the storehouse of the Tourist Organization, according to the organisation's information and public relations office. Included among the destroyed items are literary materials, books, handicrafts, book shelves and various boxes.

The flood, which steadily rose to a level of several metres above ground in the storehouse, also destroyed prints and pictures particularly prepared for the celebration of the forthcoming fourth anniversary of Revolution Day.

Beginning Monday, the workers of the organization were engaged in collecting the damaged items and drying them in the sun in order to make them regain their previous shapes and condition.

Temporary Shelter

Meanwhile in Higher 14 *kebele* 18, a total of 50 houses were slightly damaged by Saturday night's flood and miscellaneous

household goods were swept away. Water supply systems have also been disrupted. Officials of the *kebele* reported that property estimated at 200,000 Birr has been put out of order or spoiled. Affected persons are presently being given care at temporary shelters set up with the co-operation of youths who volunteered to offer their labour.

The Relief and Rehabilitation Commission and the Ethiopian Red Cross Society collaborated to donate food items to the persons.

Meanwhile in Higher 2 *kebele* 17, the locality around the Ambassador Theatre where the flood's damage was recorded to be the highest, the Addis Ababa Fire Brigade had saved the lives of two individuals working as guards in the Filwoha Administration. The fire brigade office noted that its staff members were busy until midnight in the locality helping stranded old persons and children. It stated that the office has had over 200 telephone calls the same evening and that fire brigade staff had done their best to cope with the problem.

(ENA)

CSO: 4420

ETHIOPIA

REFORESTATION EFFORT IN ASSELA

Addis Ababa THE ETHIOPIAN HERALD in English 18 Jul 78 p 6

[Text] Assela--A week-long region-wide afforestation campaign is now in progress in different districts and provinces of Arssi.

Sunday alone, over 20,000 seedlings were planted in Assela, regional capital of Arssi by residents of different kebeles. Comrade Kassa Mulissa, mayor of the town, Ato Taddese Wolde-Mikael, head of the regional office of the Forestry and Wildlife Authority, staff members of the regional schools office and Arssi Agricultural Development Unit were active participants in the venture.

Meanwhile, in Debere-Markos province, Gojjam region, more than 20,000 tree seedlings were planted in the town of Dejen last week. Taking part in the afforestation campaign were members of different mass organizations. The district administrator, cadres of the Provisional Office for Mass Organizational Affairs gave words of encouragement and agitations.

In Hararghe regional capital of Harar, a five-day afforestation campaign got underway Sunday at the Hakim Hills at which thousands of seedlings were planted in a single day venture.

Civilians, men-in-uniform and representatives of different mass organizations are taking part in the campaign.

CSO: 5000

ETHIOPIA

BRIEFS

HEAVY RAIN DAMAGE--Torrential rains accompanied by gales destroyed crops worth 20,000 Birr on 25 acres of land in Shebedino district of Sidamo region this week, it was reported from Awassa. The rains destroyed maize, enset, coffee and chat plantations within the boundary of Jarandado Dayu Autilchona peasants' association, according to the reports. In the Kegn Terra Arba kebele, Jeddi district of Menagesha province, the recent heavy rains and hailstorms have caused much damage to crops and animals. The Arba River overflowed its banks, causing lot of damage, and carrying away 31 domestic animals, the Kegn Terra Arba kebele peasants' association said. [Text] [Addis Ababa THE ETHIOPIAN HERALD in English 14 Jul 78 p 4]

CSO: 4420

ANTI-DESERTIFICATION EFFORTS DESCRIBED

Lagos DAILY TIMES in English 5 Sep 78 pp 2, 7

[Article by Biola Ajoni and Mustapha Ba'aba]

[Excerpts]

RECENTLY, the Head of State, Lt.-General Olusegun Obasanjo, planted some trees in Sokoto as part of the preventive measures against desertification. Already, the Federal Government has voted N10 million this financial year for anti-desertification crusade.

In an interview, the federal director of Forestry, Mr. Anthony Oseni said the efforts of the Federal Government at combating desertification were directed at preventing the desiccation of the open soil and the spread of sand in the Sahel region. It also included the resuscitation of the land so that farming can continue, steps were also being taken at improving farmers agricultural process and the production of fodder for cattle.

There cannot be a meaningful anti-desertification campaign unless those at the grass-roots level are involved in the campaign, Mr. Oseni said. This was why the Arid Zone Aforestation Committee headed by Dr. Anglo Abdullahi was set up by the Federal Government. The committee is charged with, among other things educating the local inhabitants of the semi-arid zone on desertification.

This having been accomplished, it becomes easier to intensify other govern-

ment desertification preventive measures designed for general soil conservation and to protect farmlands and human settlements. These other measures are general tree planting, and the establishment of shelterbelts.

The trees planted in Sokoto by Lt.-General Obasanjo in the first week of August was in furtherance of the general tree planting campaign. Organised tree planting exercise dates back to the early 1940s in Katsina province of Kaduna State. Its objective is general soil conservation.

A total of 251,000 seedlings of neem were distributed free to farmers between 1958 and 1970. The outcome of the measure is evident in the vegetation around Katsina which is richer in standing trees and shrubs than in areas around Sokoto to the west and Kaura to the south.

Since 1972 the number of seedlings distributed free to farmers has exceeded one million annually. This step has spread to Kano and Sokoto states. There has been an increase in the number of neem, eucalyptus and other trees growing around human dwellings and in the farm lands in the semi-arid zone in the last few years. This indicates an acceptance of the planting measure by the local population. They must

have realised the wind breaking effects of the trees on their farmlands. Accacia albida is one of the trees now being commonly planted for its valuable fodder during the dry season.

However the effects of the general tree planting is yet to be established. It is not known for example whether the presence of many farm trees prevent wind erosion or improve soil fertility in the farms.

The shelterbelts aspect of the anti-desertification scheme is to protect farmlands and human dwellings from the desiccating harmattan winds. During the harmattan period vegetative growth stops, grasses wither, and trees shed their leaves.

The shelterbelts also serve as sources of wood for the local population. It has now been discovered, after trying several species, that only neem and, sometimes, Bargaruwa are sufficiently drought hardy for use in shelterbelts establishment in the semi-arid zone of the country.

The neem has been successful on many sites, and prospects of production of fuel wood and poles from the shelterbelts are very bright as the neem has shown great capacity for coping under the prevailing environmental conditions.

Shelter belt

The shelter belt schemes have been well received by the local population although they are still reluctant to give up land permanently for the projects.

They claim that the beneficial effects of the shelterbelts are already evident in their farms and dwellings. They admit observing a decrease in the frequency and intensity of sand storms which damage young crops early in the farming season.

They also claim that farms protected by shelterbelts have increased yields. This would be verified later as the various aspects of shelterbelts establishment and function are now the subject of research by the Forestry-Research Institute of Nigeria. The Federal Government is co-operating with the International Research Centre of Canada in supporting the research projects.

Also, preliminary research results from the Forestry Research Institute of Nigeria indicate bright prospects

for the use of fast growing eucalyptus for shelterbelts establishment. The ameliorating effects of shelterbelts especially on wind velocity, in their vicinity are also indicated from results already obtained.

One can thus see that Nigeria is definitely making a headway in arresting the dangers of desertification. In addition to the aforementioned anti-desertification measures are other related long term projects.

These projects, in the semi-arid zones, include the rural development scheme, River basin development and development of pasture lands. In the rural development schemes at Gusau, Sokoto State, Funtua, Kaduna State and Gombe, Bauchi State, farmers are provided with the necessary inputs of modern farming, fertilizers, and improved seed. They are also taught the basic technique of intensive land use and management.

The scheme is designed to teach farmers how to improve their yield while using the same piece of land continuously thereby

preventing and possibly correcting soil degradation due to improper land use.

Under the River basin development programme the low lying basins of the major rivers and lakes in the country would be developed.

Those proposed in the semi-arid zone include the

Sokoto, Rima, Hadejia, and Jamari river basins as well as the portion of the Lake Chad basin within Nigeria. Dams would be constructed across the rivers to provide large reservoirs of water for fish farming and dry season irrigation farming along the river basins.

This measure would go a long way to regulate the water supply in the semi-arid zone, an important factor in the anti-desertification war.

It could thus be seen from the various government projects that though desertification and its attendant evils stare Nigeria in the face, we are poised for an effective war against it.

AFFORESTATION PROGRAM IN SOKOTO STATE

President's Speech

Kaduna NEW NIGERIAN in English 18 Aug 78 pp 3, 7

[Speech by Head of State Lt. General Olusegun Obasanjo, on occasion of launching of Arid Zone Afforestation Program in Nigeria, at Sokoto, 17 Aug 78]

[Text]

We are gathered here today on this very important occasion to witness the formal launching of the afforestation programme which is designed to check the encroachment of the Sahara Desert on the northern parts of our country. It is imperative that this programme is pursued with all seriousness at all levels of government as well as through individual and community effort to ensure its unqualified success. The consequences of failure are too grim to contemplate.

The sub-Saharan drought of the early 1970s and its effect on the people of our continent drew world attention to the chronic problems of survival on those occupying areas bordering the Sahel as well as the general development of areas on the desert margins. Most alarming was the apparently relentless spread of deserts and for us, the southward extension of the Sahara in particular. The world-wide reaction to the phenomenon of desertification is reflected in several resolutions of the

United Nations praying the International Community to take urgent and meaningful measures to combat the spread of deserts especially in Africa where so far not much has been done to vitiate this serious threat.

In Nigeria, as in other parts of the world, the process of desertification is a result of a combination of several factors some of which are natural and completely beyond our control while others, as we very well know are the direct result of human and animal interaction with the environment.

An important factor, outside our immediate control, in the desertification process in the Sahelian areas is the variable rainfall from year to year. In years of very low rainfall, there is less growth of vegetable matter to support human and animal populations. General degradation of vegetation results in desert conditions in areas formerly covered by vegetation.

When there are two or more successive years of below average rainfall, the effects of the droughts become even more disastrous resulting in extensive crop failures and livestock mortality.

In serious cases, this leads to migration and desertion of homes by their owners. Among the few examples of such calamity in living memory was the recent 1972 drought that affected Nigeria among other West African countries. Droughts are natural phenomena which constitute a major aspect of the desertification process. But we do also know that their harm can be mitigated greatly through a variety of means in land consolidation through the correct land use, water control, preservation of vegetation to protect the soil, controlled grazing, etc, etc.

Desertification has also been known to accompany a prolonged use of traditional farming methods in the semi-arid areas of our country. The results of such methods often lead to complete removal of vegetation from the soil surface as well as burning of plant and other organic matters on the farms both before, during and after harvests. Grains and plant stalks are often burnt leaving the ground bare and unprotected after the harvest. This practice renders the sandy soils very vulnerable to erosion by wind and water making them less capable of supporting crops and other forms of vegetation.

Consequently, yields from the farms decline rapidly over a few years. Because of the semi-arid nature of the environment, the rate of soil improvement through fallowing is very slow and the pressure on land due to population density and growth makes fallowing impracticable. Thus farmers are ultimately forced to abandon the locations for new sites where the process of soil and landscape degradation is repeated all over. To this must also be added the problem of overgrazing which occurs in the dry season.

Apart from overgrazing of the available pastures, branches of evergreen trees are lopped to provide fodder for livestock during this season. This practice results in further degeneration

of the already scanty vegetation which characterises the semi-arid areas. Quite often the herdsmen intentionally set fires to the grasses to stimulate growth of dormant grass buds, as a means of ensuring availability of fresh green pastures. These fires,

which are mostly uncontrolled further help to destroy existing vegetation and interfere with natural regeneration.

The dense population which inhabits the semi-arid zone depends entirely on firewood as fuel for cooking and heating their homes during the cold harmattan nights. The result is that there is an intensive exploitation of the scanty vegetation to meet the ever-increasing demand for firewood, and for building purposes. Even roots of plants are dug up in the search for fuel wood, while grasses are cut for roofing and fencing.

The slow rate of tree growth in this zone makes it impossible for the regeneration of forest vegetation to cope with the rate and intensity of exploitation. This has predictably led to a decline in vegetation cover and a general deterioration in environmental conditions.

Our total landmass seriously threatened by the encroachment of the Sahara desert stands today at approximately 125,000 square kilometers (about 12 per cent of the total land area of the country). In Sokoto State, desert conditions now extend for about 240 kilometers south of the Nigerian border. This has rendered about 17,000 square kilometers of farmland almost barren. Similar situations exist in the extreme northern parts of Kaduna, Kano, Bauchi and Borno States. As you know, most of our people live by farming and the loss of farmland is therefore a very serious matter,

a matter of life and death.

It can be seen therefore, that the scanty vegetation which characterises the semi-arid areas of Nigeria together with the prevailing unfavourable climatic conditions, the loose fragile soils and the high population density, together provide a rather favourable setting for the various agencies of desertification.

The problem of desertification has long been with us, but greater awareness was created by the 1972 drought of which we are all witnesses. Efforts to combat the desertification commenced in Nigeria nearly thirty years ago; organised tree planting campaigns and exercises were reported in the early 1940s in Borno and Katsina Provinces. In those provinces alone, some 2,000,000 seedlings were said to have been planted over a short period of time. The enthusiasm of those days has not however been kept up despite the occasional fillip individual and interested administrators gave the scheme.

Since 1958, Shelterbelts have been established, principally in Sokoto and Kano States, whereby 1974, over 190 kilometers of belts had been established with over 48 kilometers of roadside plantations completed in Borno State. These were achieved by the various states through their appropriate ministries and the local governments. But the seriousness of the problem has now demanded a new approach in the combined efforts of everybody.

Thus, the Federal Department of Forestry has to date established 16 nurseries, and the number of shelterbelts planted has gradually increased.

In 1976 alone, approximately 200 kilometers (600 Hectares) of belts were planted, and over three million seedlings raised for distribution to farmers. The Federal Department of Forestry field offices have been established in Sokoto, Kano, Kaduna, Maiduguri and Bauchi to improve the execution of this project.

All that has so far been achieved is no more than scratching the problem on the surface compared with the magnitude of what is required to arrest the situation. It has long been realised that the solution to the problem of desertification in the Sahelian Zone lies in the establishment or restoration of vegetation cover over the affected areas, and that whatever strategy is adopted should from the start aim at improving the living standards of the people. Therefore in tackling the Sahelian problem in Nigeria, action programme based on forestry activities had in the past been directed at:-

(i) Establishing adequate vegetation cover for purposes of restoration and maintenance of solid fertility and improvement of the environment;

(ii) Meeting the needs of the people in the locality in wood for fuel and construction purposes;

(iii) Protecting and developing pasture lands;

(iv) Support for agriculture;

(v) Protecting and rationally utilising wildlife.

But now, the forestry programme should not be seen as a mere tree planting programme to provide immediate needs of the people but rather a development programme closely integrated with other sectoral programme, namely: The rain-fed and irrigation development programmes for agriculture, the livestock and fishery programmes

To this end a National Com-

mittee on Arid Zone Afforestation has been set up by the Federal Military Government under the Chairmanship of a distinguished scholar, Dr. Ango Abdullahi of the Institute of Agricultural Research, Ahmadu Bello University. It is proposed that a State Afforestation Committee in each of the affected states consisting of professional forestry officials and other experts will also be set up to prosecute the programme on a day to day basis. A unit of this committee in each local government area of the affected states is also contemplated.

In this connection, the Federal Military Government released a sum of 2 million Naira towards the end of last financial year to enable the project to take off. In the current financial year, the Federal Military Government has also voted money for the scheme to supplement communal and other efforts.

Since firewood is extensively used by the people in the affected states, I will once again like to appeal for modernisation of our cooking habits so that we can move away from using the traditional firewood to the use of hydro-carbon products. In the development of our oil industry, it is the intention, in the near future, to provide not only gas but kerosine in sufficient quantities for domestic use. As a matter of deliberate policy also, encouragement steps are being taken to increase existing capacity in the production and manufacturing of kerosine stoves locally.

Therefore, in due course when kerosine is produced in large quantities from the new refineries at Warri and Kaduna and simple kerosine cookers become available at reasonable costs we should change our cooking habits in order to help to preserve plant life and hence the vegetation of the

environment.

One other possibility being considered is the use of coal, under strict health conditions, as alternative sources of fuel to firewood, leaves and animal dung. Deposits of coal are available in Enugu mines and other areas and plans are on hand to produce charcoal from the woods and wood wastes in the high forests of southern states, particularly from the afforestation centres where large hectares of forest lands are opened up each year.

While the problem of desertification is plaguing the northern parts of the country, other critical cases of water erosion, wind erosion and flood abound in several parts of the country. The hardest hit states include Anambra, Imo, Oyo, Benue, Plateau, Bendel, Lagos, Cross River, Ogun and Rivers. Early conservation programmes were highly localised. The earliest attempt being tree planting programme in Awka Division of Anambra State to check notorious gully erosion. Other programmes include mines and reclamation on the Jos Plateau.

A mines land reclamation unit which was set up also achieved a degree of success in establishing tree plantations on the levelled mine-dumps on the Jos Plateau. To date over 1,320 ha. of the desolate landscape mounds in the state have been reclaimed and planted up. Imo, Anambra, Cross River, and Rivers States respectively have drawn up anti-erosion and flood programmes which are being implemented. Many important watersheds in Nigeria, most of which are within forest reserves, have been protected by the establishment of forest plantations.

Early this year, a National Committee on Soil Conservation was set up to deal with the problems of soil conservation throughout the country in-

cluding the problems of floods and sitting and management of catchment areas. An international team of experts has been engaged to study soil erosion in these states and measures to be taken to combat this menace.

The destructive effect of forest fires cannot be over-emphasised. It is a matter for regret that our people still indulge in indiscriminate bush burning in spite of repeated campaigns pin-pointing the effects. Sometimes the fires spread into adjacent forest plantations established at great expense. We must take all possible measures through enlightenment campaigns, appeal, etc. to abate this criminal act and wanton destruction. Federal Government, state government, local government, traditional rulers and community leaders must all join in this crusade. The Federal Military Government is committed and determined to preserve and conserve our limited land heritage for this generation and generations yet unborn.

I wish to seize this opportunity also to appeal to all the citizens of this country particularly those living in the Sahelian zone to augment government efforts by planting trees as individuals, organisations, communities, etc. We must all participate in this programme. Your active support in this matter is necessary to avert future wood shortage in the country, check further advance of the desert, improve the environment and the quality of life not only for ourselves but for future generations as well.

The Brigade Commander and Military Administrator, the Sultan, Emirs, Chairmen of Local Government, Distinguished Ladies and Gentlemen, may I invite everyone present here to join me in planting a tree each to mark this memorable occasion.

'The destructive effect of forest fires cannot be over-emphasised. It is a matter for regret that our people still indulge in indiscriminate bush burning in spite of repeated campaigns pin-pointing the effects. Sometimes the fires spread into adjacent forest plantations established at great expense. We must take all possible measures through enlightenment campaigns, appeal, etc. to abate this criminal act and wanton destruction. Federal Government, state government, local government, traditional rulers and community leaders must all join in this crusade. The Federal Military Government is committed and determined to preserve and conserve our limited land heritage for this generation and generations yet unborn.'

Tree Planting Compulsory

Kaduna NEW NIGERIAN in English 23 Aug 78 p 13

[Article by Mu'azu Alhaji, Sokoto]

[Text]

THE Gumi Local Government Council has made it compulsory for all adults in the area to plant trees in and around their compounds.

The order was given by the Chairman of the Gumi Local Government Council, Alhaji Aliyu Gumi, during the launching ceremony of tree planting campaign in the area last weekend.

Alhaji Aliyu said that the step was taken in order to fight desert encroachment in the area and called on all adults in the area to take the new order seriously.

He said because farming was the predominant occupation of the people of the area, they could not allow land in their area to be taken over by the desert.

Meanwhile, the Sokoto State Government has taken further steps to see that people planted trees in and around their houses.

The state Ministry of Housing and Environment has now made it compulsory for all occupants of its houses to comply with the Secretary to the state Military Government's circular by planting trees in the houses allocated to them.

Tenants in the houses have been advised to obtain seedlings from the state Ministry of Agriculture, Forestry Division, to plant them in their houses.

CSO: 5000

NIGERIA

BRIEFS

FUNDS FOR FOREST PLANTATIONS--The Plateau State Government attaches more importance to the development of forestry in the state. To this end, the state government has made a provision of N1.7 million for the development of its forestry and wildlife resources, which include large scale establishment of forest plantations and reclamation of mine dumps. According to the state Chief Conservator of Forestry, Mr A. G. Musa, this provision would also cater for production of wood for domestic purposes and future industrial wood-raw-material and the establishment of game park and wildlife resorts. Mr Musa was speaking at the graduation ceremony of the 1978 Ordinary Diploma Course of Federal School of Forestry, Jos last weekend. The chief forestry conservator said that he was pleased with the progress the Forestry Research Institute had made in providing adequate facilities for the training of forestry personnel to assist in the execution of forestry projects in the country. [Article by Aboyomi Labisi] [Excerpt] [Ikeja THE PUNCH in English 5 Sep 78 p 2]

CSO: 5000

RHODESIA

COUNTRY TERMED LARGELY UNPOLLUTED

Salisbury THE HERALD in English 19 Aug 78 p 3

[Text] People at the managerial level of Rhodesian industries are almost invariably aware of the dangers of pollution and are keen to establish the highest possible standards of environmental conservation, the vice-principal of the University of Rhodesia, Professor Geoffrey Bond, said in Salisbury yesterday.

"What I have seen in many places in Rhodesia is very reassuring, but we have no cause for complacency," he told Salisbury Central Rotarians, who had invited him to speak at their luncheon.

Professor Bond is also vice-chairman of the Natural Resources Board in the Ministry of Lands and Natural Resources and chairman of the board's Environmental Conservation Committee.

He said the committee was studying and collecting facts on the effects of pesticides and herbicides, "subtle pollutants which can't be seen and can have disastrous effects."

Pesticide

The best known pesticide, DDT, which takes up to 50 years to disintegrate, "is fortunately not so great a problem here as it is in some countries."

He said the pollution of the atmosphere over Salisbury and Bulawayo may look bad but is not as serious as it seems.

Recent studies in Rhodesia have revealed several metals originating from industries in the air. "Again it is reassuring that research is being done before pollution reaches the critical level."

Bad Spots

There are one or two bad spots in Rhodesia such as the Wankie collieries and the steel works at Risco, but they still compare extremely well with the same industries in England and the United States, he said.

"Rhodesia is largely unpolluted, but we want to ensure that this country doesn't have to be retrieved, like some countries, from massive pollution.

"My committee has a long way to go, but at least it has made a reasonable start."

CSO: 5000

SENEGAL

SOUMBEDIOUNE BAY PURIFICATION PROJECT STARTING IN OCTOBER

Dakar LE SOLEIL in French 1 Sep 78 p 3

[Article by Abdallah Faye]

[Text] The work of cleaning up Soumbedioune Bay will begin in the first half of the month of October.

This is what we were told by Mr Amadou Diaw, head of the sanitary improvement department at the Ministry of Equipment, in the course of the interview he granted us yesterday.

Currently the department personnel is devoting itself to administrative problems. Moreover, the office responsible for supervision is already functioning.

The project, which will begin in less than two months, is not of recent date. It goes back to 1968, when at the request of the World Health Organization, the advisory office authorized the NEDECO studies bureau to draft a master plan for water supply and sanitary improvement for the Cape Verde region.

From this master plan, the head of the sanitary improvements department explained to us, the NEDECO derived an emergency sanitary improvement plan which was approved by the Senegalese government in 1975. This emergency plan emphasized the sanitary improvement of the west coast road sector above all, i.e., the University beach and Soumbedioune Bay, a veritable dump ground for waste water, in order to make it more suitable for the tourist trade, which is developing from year to year.

How could this be done? The problem lies in intercepting the discharge from the canals and sewers leading to these places in order to divert sewage toward Hann Point, for discharge into the sea.

Why Hann Point? It is not a question of its popularity, according to Mr Amadou Diaw, but solely for the reason that if these waters were discharged in the direction of Soumbedioune Bay, the tide would return them

to the beach, as is presently the case at University Beach, which has become foul-smelling and unsuitable for swimming, and the germs contained in these waters could affect the health of bathers.

After making a study of the tides, the technicians chose Hann Point, because it was established that the waves along the coast here have a tendency to move outward, and thus can carry sewage wastes out to sea.

Moreover, an outlet will be built such as to discharge the waters 350 meters off the coastline. Thus there will be no risk of pollution, since the germs will be destroyed by the effect of the salinity of the water.

In addition, plans call for reconstruction work on the Gueule Tapee outlet, over a distance of about 100 meters, with a bridge straddling it.

Also to be built are two relay stations for pumping the water, needed for the proper completion of the bay project, as well as a siphon and lift pipe system, essential if the water is to continue along its course without flowing, due to the slope visible at this point. It is precisely this incline along the Gueule Tapee canal which causes stagnant waters, if indeed the canal does not overflow, in the winter season, giving off foul odors.

Initially planned for the third EDF [European Development Fund] period (it is this fund which is financing this project) to cost 1 billion 40 million CFA francs, the program will not be undertaken until the fourth period, with decreased financing, "as a result of a change effected in the priority of Senegalese development projects," as the head of the sanitary development department explained to us.

With a total of 1 billion 31 million francs, the authorities have had to limit the work to be done and to carry out the work on the Gueule Tapee canal, and thus prefinancing to cover it. Moreover, these studies have been completed and the negotiations are in progress.

Following the Soumbédioune Bay purification project, the authorities in this sector will undertake the sanitary improvement of Dakar and its environs. This is an ambitious project which is to extend as far as Rufisque and which will require financing of 10 billion. The studies have been completed and the specifications for the solicitation of bids should be filed shortly.

This work is scheduled to begin in the first quarter of next year. The African Development Bank is to participate to the extent of 1 billion 280 million, with Senegal providing counterpart funds of 1 billion 168 million.

But initially, the sanitary development authorities want to address themselves to the problems posed by the disposal of sewage water. This project will require 4.5 billion.

This does not in any way imply that rainwater problems are being neglected, since the work of rebuilding the Gueule Tapee and Front de Terre canals addresses this problem too, and prefinancing prospects have already been established.

On the other hand, the Hann Bay sanitary improvement project has already reached the completion stage. It has cost 18 million 732 thousand francs.

"If all of these projects are carried out," Mr Amadou Diaw added, "Dakar will have no further sanitary improvement problems."

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ZAMBIA

LACK OF FUNDS DELAYS INSTALLATION OF ANTIPOLLUTION EQUIPMENT

Lusaka SUNDAY TIMES OF ZAMBIA in English 3 Sep 78 p 1

[Text] VITAL equipment ordered by Chilanga Cement which would have solved the pollution problem that has continued to disrupt experiments at Mount Makulu research station, has been lying idle because the company has no funds to instal it.

In fact, the outflow represented 5,000 tonnes of cement every month which could usefully be converted to money, he said.

An Indeco spokesman disclosed this in Lusaka yesterday when he commented on continued complaints by the Ministry of Lands and Agriculture that air pollution had put important work at the research station in jeopardy.

Acting director of agriculture, Mr Nicholas Mumba, reported this week that crop assessment at the station had been abandoned because soil had been polluted by dust from Chilanga Cement factory's chimneys.

Mr Mumba said his ministry could not look for alternative land to move the station which was established in 1964 because the transfer would cost about K50 million.

The Indeco spokesman said Chilanga Cement ordered special filters — technically known as electrostat precipitators — to arrest the outflow of the dust from the factory because it was as anxious as everybody else to control pollution.

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POLLUTION CONTROL MEASURES IN BELORUSSIA DISCUSSED

Minsk PROMYSHLENNOST' BELORUSII in Russian No 7, Jul 78 pp 80-81

[Article by A. Shalushkov, state inspector of the industrial region of the Belorussian SSR: "The Plant 'Produces' ... Clouds of Smoke"]

[Text] The Belorussian regional state inspection team for gas purification is the organization that deals with finding sources of harmful discharges and controlling the organization of work for curtailing and eliminating them, including the construction of gas purification installations. It also exercises control over the operation of gas and dust removal installations and the fulfillment by enterprises and organizations, regardless of their departmental jurisdiction, of the decisions, instructions and orders concerning questions of protection of the surrounding air.

With the creation of the state inspection team for gas purification (1975), certain strides were made in solving the problem we have touched upon. While, for instance, in 1976 industrial enterprises of the republic constructed and reconstructed little more than 3 million rubles' worth of gas purification and dust removal installations, in 1977 they constructed 9.8 million rubles' worth. Still, it should be noted that the level of pollution of the atmosphere in Minsk, Mogilev, Gomel', Novopolotsk and several other cities of the republic is still fairly high (according to data of the hydrometeorological service and sanitary and epidemiological stations).

The experience of the leading enterprises shows that, in order to successfully solve this important problem, it is necessary to implement a complex of measures that takes into account the peculiarities of each industry. Here, for example, is how the problem is being solved in the Mogilev Khimvolokno Production Association imeni V. I. Lenin. During the last 2 years, the majority of the gas purification and dust removal installations have been reconstructed here, a gas purification system for afterburning of carbon bisulphide has been put into operation and the production of carbon bisulphide has been stopped. A number of technological schemes that provide for protection of the environment have been specially developed for

Mogilev industries by scientists of the Belorussian Technological Institute imeni S. M. Kirov. In the future, at enterprises of the association installations will be constructed for purifying ventilation gases of carbon bisulphide and hydrogen sulphide. The quantity of harmful discharges has already been reduced by 3 tons a day.

Specialists of the Grodno Azot Production Association are also showing a good deal of concern for protection of the environment. They have constructed an installation for catalytic purification of exhaust gases, which made it possible to reduce discharges of nitrogen oxides by 5 tons a day. A special scrubber has been installed on the line of outgoing gases with nitrine columns and cyclone furnaces that have units for purifying smoke. The implementation of these measures made it possible to significantly reduce the gas content in the sanitary protection zone.

At the Minsk automotive plant, certain shops have introduced a system of purifying gas discharges from drying equipment of paint shops, which was developed by the collective of Special Design Bureau No 3. Now all harmful substances are completely burned on the spot. Because of this, fuel and electric power are saved and the fire and explosion danger of ventilation systems is eliminated.

The scientific research laboratory for gas of the Belorussian Polytechnical Institute has developed a system of two-stage purification and decontamination of gases for a number of plants. Its first section will be introduced at the Pukhovichskiy and Mozyrskiy smelting-mechanics plants. The Minsk automotive plant is already introducing an installation for the second stage of purification. Its startup will make it possible to reduce dust discharges from cupola furnaces to sanitary norms.

In recent years a good deal has been done for the protection of nature at the Gomel' chemical plant. Here, in particular, they have put into operation a sanitary gas purification installation which made it possible to reduce discharges of sulphur anhydride to less than 20 percent of the former level. The reconstruction and modernization of systems of absorption in shops for compound mixed fertilizers consisting of double superphosphate and fluoride salts reduced the content of harmful substances in exhaust gases to sanitary norms. In 1977 alone, as a result of the change in technology in the sulphuric acid shop, the use of floating cover in absorption towers and the organization of control over the parameter of the operation of the absorption columns reduced discharges into the atmosphere by 2.6 tons a day.

Gas and dust purification installations of the "wet type" are more widespread in smelting. In the majority of cases they provide for purification to the required sanitary norms when they are correctly operated. But there are also cases where these installations are operated without water, like ordinary dry purification equipment, or they are not operated at all, which is utterly unforgivable.

This pertains, above all, to enterprises of the construction materials industry, machine tool building, and the wood processing and chemical industries. Gas and dust purification installations operate inefficiently at the Grodno construction materials combine, the Vitebsk lime materials combine, the Mogilev combine for silicate items and the Automotive Plant imeni S. M. Kirov, the Brest household chemical plant, the Minsk autocytle and the tractor and automotive plants. Certification of gas and dust removal installations is proceeding very slowly.

Many enterprises have not conducted certification of discharges into the atmosphere. Moreover, the lack of specific data concerning the composition, quantity and concentration of impurities in industrial discharges impedes the selection of the most efficient systems for purifying discharged gases.

The solution to these and other problems will make it possible to reduce and, in a number of cases, fully eliminate harmful discharges into the atmosphere.

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LACK OF ENVIRONMENTAL CONCERN STIRS CRITICISM

Nicosia BASIN in Turkish 20 Jul 78 p 4

[Text] I have seen thoughtless youths just leave the remains of what they had eaten at the beach on the sand where citizens had stretched out to sunbathe and cut up watermelon rind into tiny bits and then leap up and toss it from where they sat into the sea as well as amidst those sunbathing...

As emphasized recently in an article by my friend Ahsen Tolga, at the same beach I have seen dogs cheek by jowl with people, thrust into the sea by their thoughtless owners, and later dry by shaking themselves off amidst the people on the sand...

I have seen people throw out buckets of sewage from the balconies of their houses to the road below without even taking the trouble to look and see if there were persons passing. I have seen lazy housewives dangle their plastic trash bags, stinking like carrion, that they have tied to a rope from the same balconies, so that the garbage collectors can haul them down...

Particularly at night I have seen contemptible people urinate at the foot of walls and on roads and vomit in front of everyone's house heedless of the fact that those passing can see them...

You are not going to believe that there are shameless people who prefer to defecate in an open field near their house, in which construction debris and rubble has been heaped, to the toilet with the excuse that the weather is too hot and they would perspire within the enclosures, that is to say they defecate in the open air. I have seen the likes of these...

These are our people. The places they pollute are our places, our lands, our seas. And the several examples we have given of their thoughtless and contemptible behavior are but our observations. Who knows how many other citizens there are in our villages and cities who do not care in

the slightest about cleanliness and health rules. It is possible to provide many more examples of the negative, backward attitude of persons like these who cannot appreciate civilization and who frustrate the constructive initiatives both of officials who struggle constantly in the fight for a clean environment and citizens with commonsense.

The predicament in our other cities is not much different. However, if we consider our capital we encounter a preponderance of citizens who are not demonstrating the necessary concern for a clean environment. On the scheduled days on which our municipal trash trucks collect the garbage at the houses, you cannot escape the unbearably foul smell of garbage everywhere, particularly from Nicosia's streets within the fortifications. In spite of all our municipality's warnings, a great many blistered [sic] citizens are still reluctant to keep their refuse in closed plastic drums. Instead they put it in old rusted cans, buckets, and paper bags and stick it in front of their houses. They haphazardly place their excess refuse in sheets of newspaper which they throw into a nearby empty field or into an abandoned, partially dilapidated old building.

If it is necessary to give an example we may use the old stone building which has stood for years in this manner, partially dilapidated, in the square of our city's Ayluka District. This place has been turned into a total dump. Those doing construction work in the area dump part of their debris here; those who do not want old, shabby, and unneeded articles in their houses throw them here; trash cans here accumulate the overflow from those which are full; those who must relieve themselves on the road rush here. It is impossible to explain to one who has not experienced it the stench of an exceedingly filthy, unbearable carcass. In spite of all the warnings from time to time by area residents whose houses are very near the press corps and the building and as a result of officials not taking effective measures, this building for years has proved to be a nest of filth which poses a serious threat to human health. At least we could construct the building's doors and windows in stone as a simple measure directed at eliminating this refuse dump which stands as a disgrace to our community before the eyes of foreigners who come to our city, although their numbers are small. In addition we have not prevented irresponsible citizens who flaunt human health from entering.

At the start of the summer our municipality, with the aim of insuring the necessary concern for a clean environment, made affirmative initiatives which were introduced by a number of slogans; however it cannot be said that our municipality was completely successful in these efforts. The reason for this: again the irresponsible behavior of irresponsible citizens who cannot appreciate civilization. The number of citizens who went into immediate action aroused by the slogan, "Citizen, clean up the lawn in front of your house; let's get rid of it," which was printed daily in our newspapers and announced on our radio, were so few that they could be counted on the fingers of one hand. Most citizens saw a clean environment as perhaps the last thing on their mind and were instead

motivated by the words, "Forget it; what an absurdity," did not even clean up the filth in the gardens and yards in which they stroll let alone the lawn in front of their houses.

No one heeded the signboards erected by our municipality on empty property close to various inhabited areas outside the city. What a pity that there is an increase in the number of citizens who pass by with a smile the warning, "Dumping garbage, rubble, construction debris, etc. on this railway is strictly forbidden," and who openly ridicule those who warn about environmental cleanliness. The banks of streams and empty fields are impassable because of rubbish heaps.

We cannot conclude by enumerating examples of our apathy toward a clean environment. Our capital still has a major problem which over the years has defied all solution. This problem that the factories created by flushing their waste into Kanli Dere has been the subject of our newspapers' reports for years. Although this issue has been much written and talked about, there has been no solution whatsoever. There can certainly be no end to the distressed and troubled lives suffered by area residents on account of the stench emanating from Kanli Dere. To appreciate how justified these citizens of ours are in their complaints which have persisted for years, we must spend one night (and one night only) in the house of one of these people; otherwise, we could not understand how serious a major disturbance Kanli Dere has become for area residents. One marvels how it is over the years that these area residents have not lost their lives in an epidemic. There exist aquatic deposits like so much filth, foul water and carrion on the stream bed which stretches for kilometers...

The water purification facility at Gocmenkoy, which was expanded at a cost of 20,000 Cypriot lira in order to solve the Kanli Dere problem, has been of no use as we have emphasized in our past articles. While purification facilities which have assorted breakdowns and which cannot be operated profitably occasionally stand idle, Kanli Dere continues to be polluted and spread foul odors on an ever broader scale.

The Nicosia Municipality, which has shown a special interest in this important problem of our capital, decided to investigate the facility's condition in a trip made recently to the Home Ministry for Local Administration. The good news was announced that a three-member sewage system team which came from Ankara to Nicosia would determine through careful investigation definitive means of solution and would submit a report. It is our hope and fervent desire that a definitive solution to this important problem of our capital be presented at the earliest time and that an important step has been taken toward a clean environment.

In effect, it is an obvious fact that we are not giving the necessary priority to environmental cleanliness. Despite irresponsible citizens

who race to pollute our villages and towns, the time has now come, indeed it is passing by, for our municipalities, which have shouldered the largest share of the responsibility for a clean environment, to take active measures. Since the requests and warnings that the necessary concern be shown toward a clean environment have been fruitless, we believe that a stringent control must be implemented and that offenders must be identified and punished. There is no other way. In order that we may attain as soon as possible the level of civilized societies which a long time ago solved their problems of environmental cleanliness and which are presently conducting a campaign against a disturbance called "noise pollution," officials must compile a guidebook whose maxim is, "The due of those advised but who refuse to mend their ways is punishment."

As our newspaper goes to press the three-member team of sewage system experts, which was sent by the Ministry for Local Administration at the behest of the Nicosia Municipality, completed its probes of the Gocmenkoy purification facility and prepared its preliminary report. According to the preliminary report, in order to derive results from the purification facility it must be in continuous operation. Therefore, it was deemed indispensable that the required electromechanical parts and personnel be provided. As is known, at present the facility frequently breaks down, and due to the deficiency in spare parts, shuts down every day at 1600 and all day Saturdays and Sundays.

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TURKEY

ISTANBUL POPULATION ESTIMATES, ATTENDANT PLANS PRESENTED

Istanbul MILLIYET in Turkish 18 Aug 78 p 11

[Text] The population of Istanbul will be 9 million or 12 million by 1995, it was reported.

The "Greater Istanbul Plan Bureau" which was established by the Reconstruction and Housing Ministry has been at work for many years and completed its first draft improvement plan in 1971. The target date for completion of its planning efforts was set for the end of October 1978.

The following information has been released in connection with the bureau's efforts:

The Istanbul metropolis is a city situated on the Kocaeli and Rumeli Peninsulas and concentrated in the south on the shores of the Sea of Marmara, demonstrating a proclivity for development toward the Gebze and Silivri Districts. With respect to population distribution, it is estimated that 33 percent of those living in Istanbul within the next 20-year period will be on the Anatolian side to the east and 67 percent will be on the Rumeli side to the west. This city, which comprises the most important, thriving settlement unit of the Marmara region, is at the same time a population center of considerable natural and historical import where the roads and rail routes of the East and West and the sea routes of the Black Sea and the Sea of Marmara cross.

While there were 3.886 million people living in the Istanbul metropolis according to the 1975 census, this figure has now reached approximately 4.4 million. Estimates based on the trend of development of metropolitan Istanbul are that the population will be 9 million to 12 million by 1995. Significant public investment will therefore be required to support these new neighborhoods in counterbalancing points of attraction in the eastern Marmara region.

From the standpoint of providing sufficient low-cost housing areas for low-income residents within the development of metropolitan Istanbul, the draft improvement plan envisions providing 60-140 housing units by raising the

share of public investment in total housing investments to 31 percent during the next 4th Five-Year Plan period. This would represent approximately a five-fold increase in the public contribution to housing, housing credit, and housing lots which is now approximately 7 percent of general housing investments in Istanbul.

According to the 1976 industrial census of metropolitan Istanbul, 393,906 persons were working in approximately 2,500 industrial establishments, and it is estimated that industrial employment in 1995 will be 604,400 persons.

The draft improvement plan which has been developed envisions decentralization of industrial establishments located on the Bosphorus, the Golden Horn, and the historic Istanbul peninsula which are destroying Istanbul's valuable natural and historic features and which have a negative effect on the environmental health of the city. Directing these establishments to new organized industrial areas within and outside the metropolis is envisioned.

Transportation Problem

A central authority is needed to provide an adequate level of organization of the public in mass transit in Istanbul. The improvement plan efforts envision the formation of an integrated transit system within a specific hierarchy, without competition among the rail types of mass transit.

Metro System

With an eye to using the commuter line which operates in the southern part of the city, running between Gebze in the east and Halkali in the west, to provide uninterrupted international carriage, the improvement plan calls for linking Sogutlucemes and Yenikapi with an underwater tunnel beneath the Bosphorus. Also among the decisions is a metro system to provide a mass transit link-up of the historical peninsula and Beyoglu with the city, which has a link in Yenikapi with the above mass transit rail system.

From the standpoint of revising the metropolitan area service organizations, the Istanbul port, intercity bus terminals, service landings, markets, and warehousing areas must be provided for through the relations between the central and local public investment establishments.

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TURKEY

PLAN TO REQUIRE FACTORIES TO MOVE OUT OF ISTANBUL

Istanbul GUNAYDIN in Turkish 8 Jul 78 p 3

[Article by Alp Orcun]

[Text] Work places which generate environmental pollution, noise, and transportation difficulties in the various sectors of Istanbul will be moved out of the city within the next 5 years. All industrial, warehouse, and transport facilities on the Bosphorus and the Golden Horn and in the area between Eminonu and Topkapi will be removed from the city.

Preparation of Plan Completed

Greater Istanbul Plan Bureau Chairman Kutlu Guzelsu pointed out that work on the plan has been completed and that the present status of the plan was found suitable by the government.

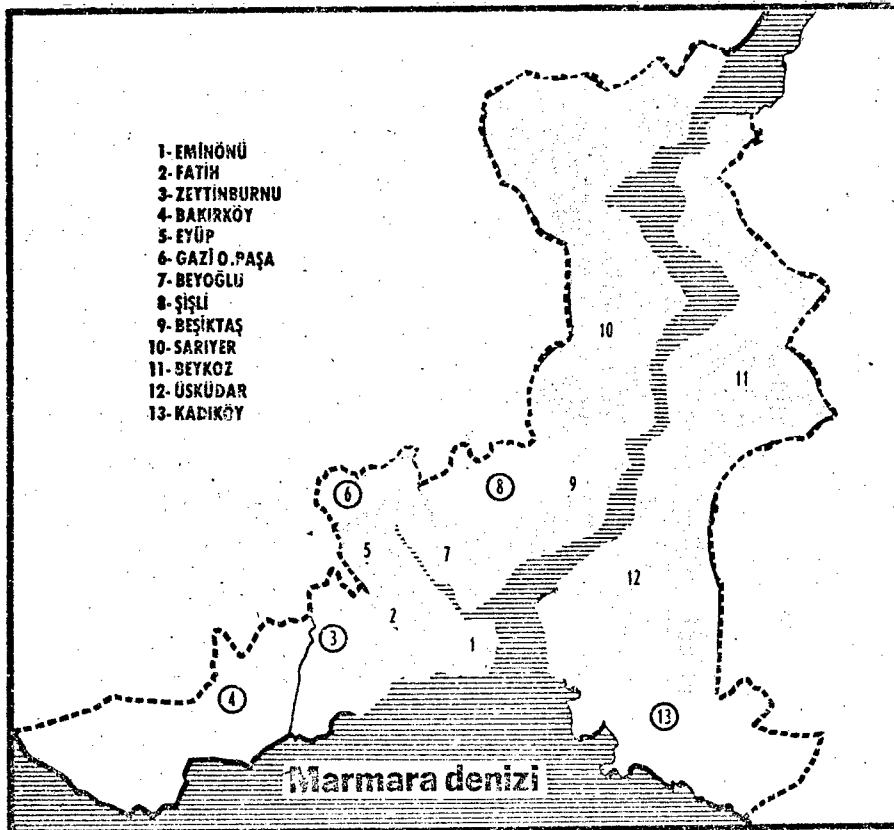
The Plan Bureau Chairman added that ridding the city of factories would begin next year together with the Fourth Plan. Kutlu Guzelsu said that with the plan they had prepared, they had resolved to make Istanbul a habitable city, quiet, clean, and free of the confusion and disorder of traffic. He said that the measures definitely would be taken.

According to the information Kutlu Guzelsu gave, the Greater Istanbul Plan envisions moving outside the city work sites which are within the city that cause air pollution, noise, and traffic jams. Implementation of the removal of work places from the city will begin with priority to the work places on the shores of the Bosphorus and the Golden Horn and in the region known as the "Historical Peninsula," which lies between Eminonu and Topkapi. Industrial, warehousing, and transport facilities located in this region will be moved out of the city as soon as possible. In this connection, the market in Eminonu and storehouses on Ebussut Avenue will definitely be moved outside the city.

Recreation Camps Instead of Factories

The sites of the industrial, warehouse, and transport facilities to be moved out of the city will be made into resort and recreation areas.

Kutlu Guzelsu said that in order for these work places to move out of the city, they would be offered incentives in such matters as taxes and fees, in addition to being shown sites in organized industrial areas to be built outside the city. However, business owners who still have not left their old locations at the end of the scheduled period will be penalized in such ways as once again raising their taxes or collecting additional taxes and holding their prices down.



The "Greater Istanbul Plan" envisages removal from the city of work places which pollute the environment and disrupt traffic. Industrial, warehouse, and transport facilities between Eminonu and Topkapi will definitely be moved out of the city within 5 years. Gray areas on the map will be cleared on work sites.

TURKEY

BRIEFS

MARMARIS FOREST FIRE DAMAGE--Damages resulting from the recent Marmaris forest fire have been estimated at 1.5 billion liras. The conflagration, which began in the area of Hisaronu between Marmaris and Datca, was brought under control after a long struggle. An inspection of the area damaged by the fire has reportedly begun and initial reports indicate that 7,000 hectares of forest land were destroyed in the blaze. [Excerpts] [Istanbul CUMHURIYET in Turkish 8 Aug 78 p 7]

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END